

I claim:

1. A wrap spring clutch syringe ram comprising:

a motor;

a flywheel being driven by said motor;

a slide platform being driven linearly by rotation of a lead screw;

at least one syringe, a plunger of each said at least one syringe being pushed by said slide platform; and

a wrap spring clutch capable of coupling the rotation of said flywheel with said lead screw to drive said slide platform, said wrap spring clutch being actuated by a solenoid, said flywheel having a substantial mass, said substantial mass providing rotational stability when said lead screw is coupled to said motor.

2. The wrap spring clutch syringe ram of claim 1, further comprising:

an electric power source supplying electrical power to said solenoid.

3. The wrap spring clutch syringe ram of claim 2, further comprising:

a switch being disposed between said electric power source and said solenoid, said switch controlling the actuation of said solenoid.

4. The wrap spring clutch syringe ram of claim 3, further comprising:

a computer controlling the actuation of said switch.

5. The wrap spring clutch syringe ram of claim 1, further comprising:

a mixer receiving the output of said at least one syringe.

6. The wrap spring clutch syringe ram of claim 5, further comprising:

said mixer being a frit mixer, a porous frit being inserted into said frit mixer.

7. The wrap spring clutch syringe ram of claim 6, further comprising:

an entrance to said porous frit of said frit mixer being flared to provide improved flow from said at least one syringe; and

an exit from said porous frit of said frit mixer being flared to provide improved flow from said frit mixer.

8. The wrap spring clutch syringe ram of claim 1, further comprising:

a speed control to enable adjustment of the rotational velocity of said motor.

9. The wrap spring clutch syringe ram of claim 8, further comprising:

a feedback control to enable maintenance of the rotational velocity of said motor.

10. The wrap spring clutch syringe ram of claim 1, further comprising:

a moving block being slidably attached to said slide platform;

a nut being structured to threadably receive said lead screw, said nut being rotatably attached to said moving block, a block hole being formed through a top of said moving block and a nut hole being formed through at least one wall of said nut; and

a pin being inserted through said block and nut holes to move said slide platform in a forward direction, said pin being removed to move said slide platform backward.

11. The wrap spring clutch syringe ram of claim 4, further comprising:

a potentiometer having a moveable tang which changes the resistance thereof, said potentiometer being mounted adjacent to said slide platform, said slide platform moving said moveable tang as said slide platform is moving forward, said potentiometer being connected to said computer through an A/D converter, the electrical output of said potentiometer indicating the position of said slide platform.

12. The wrap spring clutch syringe ram of claim 2, further comprising:

a movable safety limit switch mounted adjacent to said slide platform, to disconnect said electrical power of said electric power source from said solenoid, when said slide platform advances forward sufficiently to trip said safety limit switch.

13. The wrap spring clutch syringe ram of claim 1 further comprising:

a reactor to receive an output of said at least one syringe.

14. The wrap spring clutch syringe ram of claim 5 further, comprising:

a reactor to receive an output of said mixer.

15. The wrap spring clutch syringe ram of claim 1, further comprising:

a tachometer being used to monitor the velocity of rotation of said flywheel, said motor, or said lead screw.

16. The wrap spring clutch syringe ram of claim 1, further comprising:

said wrap spring clutch having braking capability.

17. A wrap spring clutch syringe ram comprising:

a motor;

a camshaft having at least one cam lobe;

at least one cam follower being in contact with said at least one cam lobe;

a slide platform being driven linearly by said at least one cam follower;

a flywheel being driven by said motor;

at least one syringe, a plunger of each said at least one syringe being pushed by said slide platform; and

a wrap spring clutch capable of coupling the rotation of said flywheel with said cam shaft, said wrap spring clutch being actuated by a solenoid, said flywheel having a substantial mass, said substantial mass providing rotational stability when said cam shaft is coupled to said motor.

18. The wrap spring clutch syringe ram of claim 17, further comprising:

an electric power source supplying electrical power to said solenoid.

19. The wrap spring clutch syringe ram of claim 18, further comprising:

a switch being disposed between said electric power source and said solenoid, said switch controlling the actuation of said solenoid.

20. The wrap spring clutch syringe ram of claim 19, further comprising:

a computer controlling the actuation of said switch.

21. The wrap spring clutch syringe ram of claim 17, further comprising:

a mixer receiving the output of said at least one syringe.

22. The wrap spring clutch syringe ram of claim 21, further comprising:

said mixer being a frit mixer, a porous frit being inserted into said frit mixer.

23. The wrap spring clutch syringe ram of claim 22, further comprising:

an entrance to said porous frit of said frit mixer being flared to provide improved flow from said at least one syringe; and

an exit from said porous frit of said frit mixer being flared to provide improved flow from said frit mixer.

24. The wrap spring clutch syringe ram of claim 17, further comprising:

a speed control to enable adjustment of the rotational velocity of said motor.

25. The wrap spring clutch syringe ram of claim 24, further comprising:

a feedback control to enable maintenance of the rotational velocity of said motor.

26. The wrap spring clutch syringe ram of claim 20, further comprising:

a potentiometer having a moveable tang which changes the resistance thereof, said potentiometer being mounted adjacent to said slide platform, said slide platform moving said moveable tang as said slide platform is moving forward, said potentiometer being connected to said computer through an A/D converter, the electrical output of said potentiometer indicating the position of said slide platform.

27. The wrap spring clutch syringe ram of claim 17 further comprising:

a reactor to receive an output of said at least one syringe.

28. The wrap spring clutch syringe ram of claim 21 further, comprising:

a reactor to receive an output of said mixer.

29. The wrap spring clutch syringe ram of claim 17, further comprising:

a tachometer being used to monitor the velocity of rotation of said flywheel, said motor, or said cam shaft.

30. The wrap spring clutch syringe ram of claim 17, further comprising:

said wrap spring clutch having braking capability.

31. A wrap spring clutch syringe ram comprising:

a motor;

a camshaft having at least one cam lobe;

at least one cam follower being in contact with said at least one cam lobe;

a flywheel being driven by said motor;

at least one syringe, a plunger of each said at least one syringe being driven linearly by said at least one cam follower;
and

a wrap spring clutch capable of coupling the rotation of said flywheel with said cam shaft, said wrap spring clutch being actuated by a solenoid, said flywheel having a substantial mass, said substantial mass providing rotational stability when said cam shaft is coupled to said motor.